UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION VIII
999 18th STREET - SUITE 500
DENVER, COLORADO 80202-2405

JUL 2 6 1988

Ref: 8HWM-SR

Ms. Arlene Loble
City Manager
Park City Municipal Corporation
P.O. Box 1480
Park City, Utah 84060

Dear Arlene:

We have completed work on the Ambient Air and Residential Characterization Report for Prospector Square. Our final report, a copy of which is enclosed, presents the background, methods, and results from all sampling conducted by EPA under the approved work plan for this phase of the Prospector Square field work. As you know, the second and remaining phase of the Prospector Square field work, addressing ground and surface water, will be covered in a report to be prepared by the Utah Department of Health.

EPA's enclosed study is the substantial equivalent of a remedial investigation; thus, we are confident in presenting recommendations to you that will prevent human exposure to heavy metals from the tailings in the Park City area. The findings and recommendations contained in this final air and soils report should be read and understood in light of the conclusions reached by the Agency for Toxic Substances and Disease Registry (ATSDR) at the conclusion of its extensive biological monitoring program in the Prospector Square community.

EPA conclusions are as follows:

1. EPA concurs in ATSDR's finding that there is no evidence of exposure to lead, arsenic, or cadmium at levels believed to be harmful among current residents in the study area.

2. There are potential direct contact and ambient air exposures posed by elevated levels of heavy metals in the Park City area. Specifically, our outdoor air study identified elevated levels of chromium, lead, zinc, and other metals in downwind samples compared to upwind samples. Although levels in the downwind samples were elevated, the overall levels of airborne contaminants were quite low and we can conclude that they do not present a public health hazard.

3. Our residential characterization study found the major area of contamination to be in the residential soils. The highest levels of lead, arsenic, and zinc in soil samples were consistently found at Prospector Square residences, the community closest to the exposed tailings. Lead levels were significantly

residents from fugitive dust.
d) Institutional controls are an additional means of ensuring that the integrity of the cover is maintained over the long term. Such controls should include zoning ordinances and/or covenants on the property to ensure that future owners are aware of the importance of maintaining the soil/vegetative cover.

2. RESIDENTIAL SOILS

The high levels of lead, arsenic, manganese, and zinc found in some of the residential soils can not be solely attributed to the levels of airborne contaminants migrating from the exposed tailings. The high level of contaminants in the residential soils is in part due to the tailings material underlying most of Prospector Square. We are concerned that individual landscaping practices may not ensure adequate cover of the tailings material at present or in the future. Activities such as gardening (both vegetable and flower) or the planting of bushes and trees could present a potential exposure pathway to the residents. Other activities that could present a possible exposure pathway to residents include construction, street repair, or utility maintenance.

a) EPA recommends further testing of residential soils to identify those areas with elevated levels of metals. Based on the results of such testing, a number of options may be considered to ensure adequate cover of the tailings. Residences where the yards have already been landscaped may be more limited in the options available.

b) EPA has at its disposal the means of testing the residential soils with a quick turnaround (1 day) time, should the city or residents wish to have further testing done. Additional soil capping efforts are recommended if surface soil samples (upper 1 inch) have lead levels in the range of 1000-2000 ppm (milligrams per kilograms of soil). If the surface soil levels are greater than 2000 ppm in a residential area after capping and other remedial efforts, those efforts are likely to have been ineffective and additional remedial activities are warranted. Additionally, if the soil levels are greater than 2000 ppm, we recommend that a survey of the priority pollutant metals be run and additional risk assessment analysis completed. Testing of soils using X-ray fluorescence scans would be an appropriate technique.

c) Additional soil cover up to 1 foot is recommended where high levels of metals occur in soils that are presently sodded with grass. A soil cover of 6 inches will break the human exposure pathway presented by the residential soils, but 6 inches of soil will not ensure long-term protection. If the grass in a landscaped yard is currently showing signs of stress (not due to a lack of watering or maintenance), the possibility of

insufficient suitable soil cover for the grass roots must be considered. For yards that are not yet landscaped, residents may wish to consider placing up to 2 feet of suitable soil cover over the tailings material. We also recommend the addition of limestone or a similar calcium carbonate enrichment to the soil as a means of minimizing the effects of high metal concentrations.

For those vacant lots that were covered with 6 inches of suitable soil cover under the Special Improvement District authority, EPA considers that measure to be a temporary measure until the lots are developed. EPA assumes that that cover will be maintained. At the time that the lots are developed, measures will need to be taken during construction to minimize exposure to the nearby residents and to the workers. Additional soil cover up to 2 feet on these undeveloped lots should be considered as part of any landscaping effort.

d) Generally, for flower or vegetable gardening, the practice of turning over the soil would not disturb more than 1 foot of cover. However, for trees or bushes, additional soil material is generally excavated during landscaping. Particular care should be taken in digging up tailings material in such locations to ensure that such material is not mixed with suitable soil material or placed at the surface. To ensure healthy trees and bushes, a resident may wish to consider the selection of species with a high tolerance to metals such as lead, cadmium, zinc, or manganese. At the time of planting trees or bushes, the excavation of additional material and replacement with suitable soil material may be desirable to ensure an adequate supply of suitable material for rooting as the plant grows. However, the disposal of this "tailings" material in an appropriate place needs to be assured.

The evaluation for the potential effects of the metals upon plant growth are much more variable. However, the human health criteria will also generally be protective to plants. At this particular site, metals other than lead will likely be the offending agents. Zinc and copper are likely candidates with additional effects expected from the remaining metals. We recommend that, in areas with stressed vegetation after capping or other remedial efforts, additional sampling be conducted. We recommend that the soil samples be composited from the surface to a depth of 24 inches. Testing of the soils using X-ray fluorescence scans would be appropriate.

e) Institutional controls are an additional means of ensuring that the integrity of the cover is maintained over the long term. Such controls should include zoning ordinances and/or covenants on the property to ensure that future owners are aware of the importance of maintaining the soil/vegetative cover.

The above measures are recommended as a means of remediating the resident's exposure to elevated levels of metal contaminants posed by the exposed tailings area and by the residential soils. By covering the exposed tailings and increasing the soil cover of the yards, the potential for exposure through ingestion or inhalation can be significantly reduced. Following implementation of the above recommendations or other measures deemed appropriate, EPA recommends that the City or State conduct additional monitoring to ensure the effectiveness of these measures.

Specifically, we are hopeful that enforceable ordinances or other regulatory mechanisms can be put in place by Park City to ensure the effectiveness and longevity of actions taken to isolate the residents of Prospector Square from the metals of concern. Such ordinances should ensure the protectiveness of the remedial actions taken even as property is transferred over time.

EPA believes that, if Park City and its property owners implement these recommendations, there will be effective remediation to possible exposure to heavy metals found in tailings at and around the Prospector Square area. EPA does not create liability; therefore, we cannot remove liability. However, EPA can state that it sees no impediment to financial transactions involving properties remediated in accordance with the above recommendations.

EPA appreciates your patience throughout the course of our studies and we hope that our recommendations will lead to a more healthy environment for the residents of Park City, Utah.

Sincerely,

Robert L. Duprey, Director
Hazardous Waste Management Division

Enclosure

cc: B. Bradford, UDH